

Facilities Department - Energy/Sustainability Projects

<u>Project Group Cost</u>	<u>Project Group</u>	<u>Budget Request</u>	<u>Title</u>	<u>Description</u>	<u>Justification</u>	<u>Department</u>	<u>Asset Type</u>	<u>Title</u>	<u>Fiscal Year</u>	<u>Division Priority</u>
\$140,000	Energy Resiliency	\$140,000	Energy Resiliency / Microgrid Feasibility Study	The energy resiliency/microgrid feasibility study would enable the City to identify, explore, and plan for enhanced energy resiliency at municipal facilities. In addition to identifying opportunities to expand conventional emergency generator backup capabilities, this study would help the City determine how cutting-edge energy storage and renewable energy technologies could be implemented to provide cost savings as well as resiliency to climate change hazards.	Energy resiliency was identified as a clear and major priority of the City's Municipal Vulnerability Preparedness (MVP) planning process. Improving energy resiliency through the investigation of renewable backup energy and exploration of potential microgrid projects were identified as major priorities in the City's MVP Planning Report. Funding to commit this planning process would enable the City to leverage potential grant funding from the MVP program to explore the feasibility of improving energy resiliency at critical facilities.	Mulitple	Buildings and Critical Infrastructure	HVAC Renovation	2021	1
\$742,296	HVAC Mechanical	\$33,500	Signals Division HVAC Renovation	Replacement of existing gas unit heater, thru-wall unit heaters, and window AC units with an energy efficient heat pump system and high efficiency gas unit heater.	HVAC equipment at the Signals Division has reached end-of-life and is very inefficient. In their energy assessment of the facility, Horizon Energy Solutions (an Eversource-approved municipal vendor) indicated that the efficiency of the unit heater was approximately 65% and the efficiency of the thru-wall units could be as low as 50%. Horizon projects that the proposed heat pump system would be 93 - 97% efficient in steady state operation. Based on this efficiency improvement, this project is expected to result in annual energy savings of \$1,644 and 160 MMBtus, significantly improve occupancy comfort, as well as remove reliability concerns associated with the existing equipment.	Facilities	Building Mechanical	LED Lighting Retrofit	2021	3
		\$70,000	Old Edgell Library AC Improvement	While heating for the facility was largely addressed with the Ameresco energy efficiency upgrade, the facility relies on an aging air handler unit, cooling coils, and condensers to maintain building occupant comfort in the summer. The proposed project would replace the existing central cooling equipment that is inadequate or not properly functioning.	With a broken condenser on the rooftop of the facility, work needs to be done to ensure that cooling will be available for the upcoming summer months. This is a priority project given that there is no supplementary cooling at the facility. This project will provide adequate cooling while removing aging equipment (some almost 20 years old) that is vulnerable to failure.	CPFM	Building	Water Treatment System for Building and Resurfacing Ice	2021	3
		\$30,000	Cushing Memorial Chapel HVAC Renovation	The proposed project would implement an energy efficient heat pump system for the Cushing Memorial Chapel, making redundant existing end-of-life cooling and heating equipment at the facility.	As part of a municipal initiative to curb rising natural gas consumption and improve HVAC performance, this project would implement a heat pump system with cooling and heating capabilities at the Cushing Memorial Chapel. In addition to reducing energy costs by approximately 10% at the facility, the associated removal of the existing equipment will result in reduced maintenance costs and staff time. On a per square foot basis, the Chapel is one of the least efficient facilities in the Department. As the facility is also rented out throughout the year, this project would better equip the facility to handle cooling and heating during high occupancy events and gatherings.	CPFM	Building Mechanical	Old Edgell Building Insulation	2021	2
		\$278,106	Framingham High School EC Motors	The proposed project would result in the replacement of the motors in (68) exhaust fans and (204) fan coil unit fans with more energy efficient, EC motors.	As one of the largest municipal energy users, the implementation of this measure at Framingham High School would have a significant impact on municipal energy consumption. Having been reviewed by the utility on a preliminary basis, the project is expected to result in a decrease of 100,300 kWh in electric use (with expanded efficiency opportunities not requiring any additional equipment). In addition to energy savings, the EC motors would be more reliable than their existing counterparts.	Schools	Building Mechanical	Old Edgell AC Upgrade	2021	1

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Reference	HVAC Mechanical	\$45,160.00	School Steam Trap Changeouts	This project involves the replacement of orifice steam traps at Walsh Middle School and Stapleton Elementary School. As orifice steam traps are very inefficient types of steam traps in HVAC steam distribution systems, replacement of them with thermostatic steam traps in expected to increase system performance, efficiency, and uniformity.	With natural gas being the primary fuel source behind the City's increasing energy use, maximizing the efficiency of school HVAC systems is an important step towards reducing overall municipal energy use.	Schools	Building Mechanical	Cushing Chapel HVAC Renovation	2021	1
		\$220,530.00	Framingham High School AHU Improvements	This project would result in the implementation of variable frequency drives (VFDs) for each of the 16 supply fans and exhaust fans in roof top units (RTUs) and heat recovery units (HRUs) across Framingham High School.	Currently, RTUs and HRUs at the Framingham High School have constant volume fans that run at their full output capacity whenever they run. The implementation of VFDs will modulate their speed to save energy and reduce equipment wear. In a review of proposed projects from B2Q's retrocommissioning report of the facility, Eversource identified this as a worthwhile measure with annual savings of 113,671 kWh, 7,298 therms, and \$27,566 in avoided energy costs.	Schools	Building Mechanical	High School EC Motors	2021	3
		\$65,000.00	Miscellaneous Facilities HVAC Improvements	This project would result in the implementation of VFDs, energy management systems (EMS), and other HVAC upgrades at facilities such as the Village Hall, Academy Building, and Cushing Park Facilities.	This project will result in cost savings across municipal facilities and improve facility HVAC performance.	CPFM, Parks	Building Mechanical	Energy Resiliency / Microgrid Feasibility Study	2021	3
\$76,101.00	HVAC Operational	\$25,585.00	Framingham High School Economizer Sequence Modification	This measure involves the changes to sequences of operation of various HVAC equipment serving Framingham High School to achieve greater energy savings and improved HVAC performance.	Implementation of this project would enable Framingham High School to optimize the operation of existing equipment to maximize energy efficiency. In a review of proposed projects from B2Q's retrocommissioning report of the facility, Eversource identified this as a worthwhile measure with annual savings of 46,137 kWh and \$8,528 in energy costs.	Schools	Building Mechanical	School Refrigeration Enhancements	2021	5
		\$50,516.00	Barbieri Elementary School AHU Improvements	This project would involve the revision of the sequence of operations controlling variable frequency drives (VFDs) in rooftop units (RTUs) as well as improve the economizer sequence of operation across air handler units (AHUs).	Similar to the economizer project proposed for Framingham High School, the implementation of this project would enable Barbieri Elementary School to optimize the operation of existing equipment to maximize energy efficiency. In a review of proposed projects from B2Q's retrocommissioning report of the facility, Eversource identified this as a worthwhile measure with annual savings of 78,589 kWh and \$13,934 in annual energy costs.	Schools	Building Mechanical	Framingham High School Kitchen Hood VFDs	2021	5
\$60,000	Insulation & Weatherization	\$30,000	Old Edgell Library Insulation	This project would entail the insulation of the attic space above the main area of the Old Edgell Library. This project was identified as an energy-saving measure through the City's partnership with Eversource.	Insulation of the attic space at Old Edgell Library would reduce a significant amount of the heat loss and infiltration during the summer and winter months. In addition to directly improving conditions for building occupants, insulation of the attic space will reduce the load on the HVAC equipment in the facility.	CPFM	Building	School Steam Trap Changeouts	2021	4
		\$30,000.00	Miscellaneous Facilities Insulation	This project would involves the insulation and weatherization of CPFM and Parks facilities across the municipality.	This project will result in cost savings across facilities, improve energy resiliency, and reduce energy costs.	CPFM, Parks	Building Mehcanical	Framingham High School AHU Improvements	2021	3

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\$92,714	LED Retrofits	\$92,714	CPFM, Parks, & DPW LED Lighting Retrofits	Removal of existing and outdated high-pressure sodium (HPS) and fluorescent lighting across facilities of CPFM, DPW, and Parks, Recreation, and Cultural Affairs including: Henry Street Garage (DPW), Cushing Parking Lot (Parks), Cushing Chapel Parking Lot (Parks), Loring Arena (Parks), Cushing Chapel (CPFM), Old Edgell Library (CPFM), and the Academy Building (CPFM).	With an average 4.23 year payback, new LED lighting across the identified facilities will result in significant energy savings (\$19,200.94 annually), improved lighting quality, reduced maintenance, and a reduction of 44 metric tons of carbon dioxide equivalent emissions annually. This projects represents a collaborative effort between municipal facilities to cut costs, save energy, and reduce greenhouse gas emissions.	Facilities, DPW, Parks	Building Mechanical	Framingham High School Economizer Sequence Modification	2021	4
\$157,250	Miscellaneous	\$80,000	Loring Ice Arena Real Ice Treatment System	This project involves the implementation of a Real Ice Treatment System, reducing or eliminating the need for the Parks Department to utilize hot water when resurfacing the ice. In addition to improving the quality of the ice for skaters, this water treatment system is projected to result in significant energy savings.	Given the significant demand for electricity and natural gas as part of the re-icing process,the implementation of a water treatment system is an innovative way to improve ice quality while reducing energy costs that ice arenas have begun to utilize. With a projected 20-25% reduction in energy cost savings, this project will help curtail rising energy consumption from the newly expanded facility. In addition, the project is expected to reduce wear and tear on other equipment and reduce the number of cleanings needed to maintain the high quality of the ice.	Parks	Building Mechanical	Barbieri Elementary School AHU Improvements	2021	4
		\$54,155.00	School Refrigeration Enhancements	This project would result in the implementation of high-efficiency fan motors, anti-sweat heaters, and advanced controls to significantly improve the efficiency of refrigeration units at Barbieri Elementary School, Cameron Middle School, Framingham High School, and Walsh Middle School.	These projects are expected to result in savings of 82,114 kWh in energy use and \$13,959.47 of energy costs annually. This project is a major energy saving and cost-effective initiative that will assist the School Department in working towards its energy reduction targets.	Schools	Building Mechanical	Miscellaneous Facilities HVAC Improvements	2021	2
		\$23,095.00	Framingham High School Kitchen Hood VFDs	This project would implement variable frequency drives (VFDs) to reduce unnecessary energy use by the high schools kitchen hoods.	With projected annual energy cost savings of \$3,868.35, this project will save energy by reducing the amount of conditioned air that is exhausted out of the building through the kitchen hoods.This is a cost-effective project to assist in making Framingham High School more energy efficient.	Schools	Building Mechanical	Miscellaneous Facilities Insulation	2021	2